Early Opportunity: CSL Offers Undergraduate Summer Research

For the second consecutive summer, undergraduates like Angela Pak (MBB, 4th year) had the opportunity to work alongside faculty like Associate Professor of Biology Nick Menhart and graduate students on research funded by agencies like the National Institutes of Health. See story on p. 6.

Associate Professor Nick Menhart and undergraduate Angela Pak (MBB, 4th year) work toward determining the role and clinical relevance of exon skipped motifs of the dystrophin rod.
MISSION

The mission of the College of Science and Letters at Illinois Institute of Technology:

Deliver superior educational and research opportunities through B.S., M.S., and Ph.D. degree programs as well as certificate, professional master’s, and short-course programs.

Provide responsive, appropriate core curriculum courses for students from all academic units at IIT.

Engage in nationally and internationally recognized research and scholarship in biology, chemistry, computer science, mathematics and science education, humanities, mathematics, physics, and social sciences.

Promote interdisciplinary and collaborative research among faculty and students within and outside of IIT and the college.

BOARD OF OVERSEERS

James E. Cowie, Board Chair
Frontenac Company

Patricia E. Berg (Ph.D. BIOL ‘73)
The George Washington University
Medical Center

Terrence Heng
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Joel Krauss (MATH ‘71)
Market Strategy Group

Anita M. Nagler (LAW ‘80)
Consultant

Letter from the Dean

Greetings!

I am delighted to take the reins of the College of Science and Letters from retiring Dean Buck McMorris. Buck led the college through its formative years with skill and vision, and, from this strong foundation, we are now well placed to grow in stature and visibility. Thank you, Buck!

To start, a little about myself. I received my early education in physics at Oxford University in England and came to the United States to graduate school at the University of Pennsylvania, where I received my master’s and doctoral degrees. Following postdoctoral time at the Niels Bohr Institute of the University of Copenhagen, I began my academic career as an assistant professor of physics at Yale University. I subsequently moved to Argonne National Laboratory as a member of the scientific research staff, then, via a joint appointment, to the University of Illinois at Chicago as professor of physics and, most recently, as vice provost for planning and programs.

So, although I am new to IIT, I am no stranger to Chicago with its amazing collection of academic, research, and cultural institutions, and all the opportunity and challenges it brings.

My research has touched on areas of nuclear, atomic, and particle physics and has involved studies from the theoretical to experimental work carried out in small groups, and now in one of the largest scientific collaborative enterprises ever, the Compact Muon Solenoid experiment at the Large Hadron Collider accelerator at CERN in Geneva, Switzerland.

As I think about education and scholarship in the 21st century, it is clear that traditional disciplinary excellence and research at the forefront of disciplines will remain key. But opportunity and unfulfilled needs are increasingly to be found at the interfaces and overlaps of our traditional disciplines. Indeed, for success in the 21st century world, it might be said that mere disciplinary knowledge will not be enough. Success will increasingly come to those who understand the broader context of their disciplinary knowledge and who are able to apply this with appreciation of the modern world and the variety of its social, cultural, and political dimensions.

For IIT, this represents a wonderful opportunity to train future leaders who not only excel in their chosen disciplinary or professional areas, but also are educated in a much broader sense with an awareness of the needs and complexity of the modern world.

CSL will play the key role in the realization of this opportunity. Our college, with its representation of mathematics and fundamental science, its connection to application through computer science and mathematics and science education, and the humanities and social sciences, has all the needed ingredients. CSL is the place at IIT where fundamental knowledge at the forefront of the sciences and the humanities is both created and shared; it is the place where IIT’s scientists, technologists, and professionals receive their broader education in language, culture, politics, and communication.

Thus, CSL will continue to prosper in its traditional disciplines and programs and, increasingly, through scholarship and educational programs that link the disciplines and that join IIT with external partners in Chicago, the nation, and across the globe. We aim to be a model for broadly based education and scholarship in the context of a technology-focused university.

To build on this outline, I have initiated a strategic planning process for CSL that, in synchronization with the overall IIT planning process, will produce a set of goals and aspirations that will guide us in the coming years.

I look forward to keeping you informed of our progress and to meeting and talking with many of you as I travel and at upcoming IIT events.

It is both exciting and a pleasure to be at IIT.

RWW
IIT President John Anderson thanked Dean McMorris (right) for his service and leadership at McMorris’ retirement party this spring.

The number of undergraduates studying sciences and letters grew by more than 50 percent under his watch, new programs were added, the number of tenure-track faculty and amount of research dollars increased, and the college gained new stature within IIT.

He will continue his research and work with graduate students, and he started a new Applied Mathematics summer research scholarship.

Thank you, Buck!

Meet Dean Betts
Dean Betts will be meeting with alumni and other friends at a number of upcoming events, both on Main Campus and around the country. If you would like to know when he will be in your area—or if you plan to be on Main Campus and would like to visit with him—please call Patty Cronin at 312.567.3132 or James Sison at 312.567.5039.

IIT Welcomes Russell Betts as New CSL Dean
“Russell Betts brings an extensive background in science and academic planning that will be a great asset to both the College of Science and Letters and the university as a whole,” said IIT President John Anderson.

Betts’ work is well known in the study of cluster structure in atomic nuclei, and he discovered several important phenomena in this field. Most recently, he led a University of Illinois at Chicago (UIC) group in studies of high-energy density QCD matter (quark matter) at Brookhaven National Laboratory’s Relativistic Heavy Ion Collider and at CERN’s Large Hadron Collider.

Betts has served as consultant and adviser to national laboratories and national and international funding organizations and conference committees. At UIC, he participated in many department, college, and university-wide activities, including strategic thinking committees.

More Honors for Alumna Susan Solomon
Accolades continue for Susan Solomon (CHEM ’77). In April, she was elected a member of the American Philosophical Society, founded in 1743 by Benjamin Franklin. In May, she was elected to the Royal Society, the 350-year-old British scientific society whose members include Stephen Hawking, and was named one of the “World’s Most Influential People” by Time Magazine. A senior scientist at the National Oceanic and Atmospheric Administration, Solomon chaired the International Panel on Climate Change (IPCC) that won the 2007 Nobel Peace Prize for efforts to share information about climate change to pave the way for measures to counteract it.

New Science Research
Assistant Professor of Biology Wei Zhang was just awarded a five-year, $3 million grant from the United States Department of Agriculture (USDA) to enhance the ability to analyze microbiological and chemical threat agents utilizing Food Safety Inspection Service (FSIS) methods, and to improve laboratory capacities for food defense assignments and outbreak response. Assistant Professor of Physics David Gidalevitz received a four-year, $1.2 million grant from the National Institutes of Health (NIH) to study new antimicrobial peptides to address the problem of bacteria that are resistant to traditional antibodies. For more department news, please see p. 8-15.

University Welcomes New Provost Alan Cramb
Alan W. Cramb joined IIT as provost this spring. He came from Rensselaer Polytechnic Institute (RPI), where he was dean of engineering and the John A. Clark and Edward T. Crossan Professor of Engineering. Before that, Cramb was head of the Materials Science and Engineering Department at Carnegie Mellon University, where he was on the faculty for nearly 20 years.

IIT Strategic Planning – “Many Voices, One Vision”
IIT is in the midst of a major strategic planning process, called “Many Voices, One Vision,” to set the course for the university’s future. CSL’s Christopher White, associate professor of physics, and John Collins, vice president of business and administration, are co-chairing a 25-member steering committee that is leading the strategic planning process with the Office of Institutional Strategy. They will present their recommendations to IIT President John Anderson this semester and he will present his to the Board of Trustees in May 2009.

Dean McMorris Retires, IIT Thanks Him for His Leadership
IIT President John Anderson thanked Dean McMorris (right) for his service and leadership at McMorris’ retirement party this spring.

The number of undergraduates studying sciences and letters grew by more than 50 percent under his watch, new programs were added, the number of tenure-track faculty and amount of research dollars increased, and the college gained new stature within IIT.

He will continue his research and work with graduate students, and he started a new Applied Mathematics summer research scholarship.

Thank you, Buck!
Five from CSL Receive IIT Alumni Awards

This spring, a record number of CSL alumni received IIT Alumni Awards. They are:

**IIT Alumni Medal**

Gloria Ray Karlmark (CHEM, MATH ’65) made history as one of the Little Rock Nine. After graduating from IIT, she went on to work for IITRI, IBM Nordic Laboratory, IBM International Patent Operations, Computers in Industry (which she co-founded), and for Philips International in Belgium, the Netherlands, France, Germany, Spain, and Scotland. She lives with her husband in Sweden. Karlmark received the Congressional Gold Medal in 1999. While on campus for her award, Karlmark spoke at a lunch packed with students and staff.

**IIT Professional Achievement Award**

Melvin E. Stern (M.S. PHYS ’51) made critical discoveries about the ocean that are helping humankind predict phenomena such as tsunamis and hurricanes. The Ekman Professor Emeritus of Oceanography at Florida State University, he is a member of the National Academy of Sciences and the American Academy of Arts and Sciences, the highest award for U.S. scientists.

**IIT Alumni Service Award**

Edwin F. Stueben (MATH ’58, M.S. ’60, Ph.D. ’63) has spent 50 years as an active member of the IIT community, first as a student, and then as a professor, department chair, director for the Center for Educational Development, and vice president. He developed Rice Campus, won two teaching awards, and received honors from the Academy for Educational Development for his role in creating IIT’s Minorities in Engineering program, among many others.
CSL Takes Part in Science Chicago, “World’s Largest Science Fair”

“Science Chicago: Life’s a Lab” (www.sciencechicago.com), called “The World’s Largest Science Fair,” is a year of science activities hosted by more than 120 Chicago-area partners, including IIT. Managed by the Museum of Science and Industry, it is funded by the John D. and Catherine T. MacArthur Foundation, the Searle Funds at the Chicago Community Trust, Abbott Labs, the Boeing Company, Illinois Tool Works, and Motorola. It runs through August 2009.

David Baker, vice president for external affairs, initiated IIT’s involvement in the event, which was created to help spur interest in science and “bring out the scientist in all of us.” Leon Lederman, IIT Pritzker Professor of Physics, is chair of the science advisers group for Science Chicago.

John Zasadzinski, chair of the Biological, Chemical, and Physical Sciences (BCPS) Department, is hosting five Science Chicago events. The first was “Cancer Cells in a Microscope,” with Assistant Professor of Biology Jialing Xiang and her graduate students, including Ph.D. candidate Bonnie Haferkamp, who gave the lecture. “Bridge-Building Techniques and Demonstrations” was led by IIT alumnus Roy Coleman (PHYS ’64), a renowned former Morgan Park High School teacher who originated the international bridge-building competition.

Professor Zasadzinski gave the program “Superconductivity,” and IPRO 331 students talked about the “Science of Global Warming.”

Students from the Applied Mathematics Department’s IPRO 330 and their adviser, Applied Mathematics Associate Professor Michael Pelsmajer, spent a Saturday in September at Labfest, a giant outdoor science fair on the lawn of the Museum of Science and Industry.

Upcoming programs include “Weird (Electronic) Science,” Friday, December 12, 3:30 p.m. It will be held in 111 Life Sciences on Main Campus. All alumni are invited to attend and bring kids. To RSVP, call 312.567.3132.

IIT’s Armour College of Engineering and other university groups plan more Science Chicago activities for 2009.

For more information, visit www.sciencechicago.com or call 312.567.3132.
Led by CSL Board of Overseers Chair Jamie Cowie, members Joel Krauss (MATH ’71), Roger Marz (PS ’52), and Anita Nagler (LAW ’80), and other CSL alumni, the college raised enough money to award eight students with CSL Undergraduate Summer Research Stipends, which provide $5,000 for 10 weeks of summer research work with faculty.

“We are deeply grateful for our overseers’ leadership and for our alumni support,” said CSL Dean Russell Betts. “Without question, this support makes a difference in the lives of our students.” CSL has raised $80,000 since the start of the program, which has provided 16 students with summer research stipends.

This year’s stipend winners and their faculty mentors:

• Emily Mick (CHEM, 3rd year) worked with Assistant Professor of Chemistry Joy Chong to make fluorescent iron-depleting agents for cancer therapy and imaging.

• Angela Pak (MBB, 3rd year) helped Biology Associate Professor Nick Menhart with research to determine the role and clinical relevance of exon skipped motifs of the dystrophin rod.

• Scott Justus (BIOCHEM, 4th year) used circular dichroism and other techniques in assisting Biology Assistant Professor Joseph Orgel with biophysical studies of connective tissue structure at molecular resolution.

• Kok Ann Gan (BIOL, 3rd year) with Biology Assistant Professor Chunbo Zhang researched connexin 43 and its role in preventing cancer.

• Christos Mitillos (AMAT, 4th year) and Hemanshu Kaul, assistant professor of applied mathematics, worked on open problems in graph theory – specifically on fall chromatic
UPDATE: Last Year’s Awardees

Highly competitive graduate schools, medical schools, and workplaces expect standout GPAs and test scores, said Assistant Chemistry Professor Joy Chong. “But if students have done research and published papers, they begin to stand out from the crowd.”

Summer research has made a big difference to several students who were awarded a stipend last summer:

• Hyun Beom Lee (CHEM ’08) entered the organic chemistry program at Northwestern University this fall. “He got in because of his summer research experience,” said Chong, his adviser. “And he didn’t have to worry about money.”

• Alayna George (MBB ’08) entered the Ph.D. program in biochemistry and molecular and cellular biology at the University of Arizona, Tucson, this summer in part because of her research experience with Biology Professor Ben Stark.

• Jeff Cecil (PHYS ’07) graduated last winter and accepted a position with Exelon in energy trading. He worked with Physics Professor Carlo Segre.

• Chris Ruszczak (MBB, 5th year), who worked with Biology Associate Professor Nick Menhart, presented his research at the Argonne Undergraduate Research Conference; will publish one, and possibly two, academic papers; and plans to attend graduate school at Northwestern University or the University of Chicago – all made possible by summer research.

The other 2007 CSL Undergraduate Summer Research Stipend awardees, Min Kim (CS, 4th year), Alex Bunce (CHEM, 3rd year), Andrew Mehr (PS and PSYCH, 3rd year), and Melissa Lee (BIOCHEM, 3rd year), continue successfully with their undergraduate studies.

You can’t always know how your donations help others. But in this case, your support of the CSL summer research program has far-reaching effects on our students’ lives.

Marz (PS ’52) Pledges Estate Gift to Undergraduate Summer Research

Political science alumnus Professor Roger Marz (PS ’52) has pledged a large estate gift to the CSL Undergraduate Summer Research Stipend fund, former CSL Dean Buck McMorris announced this spring. “As a retired college professor I wanted to support education,” Marz said of his gift. “I had three possible places to support: IIT; Michigan State University, where I did my graduate work; or Oakland University [Rockland, MI], where I taught for 30 years.” After considering the possibilities, and talking to his children, Marz decided on IIT and the CSL summer research program.

“When I got to know Buck and the summer research projects, I thought they were a great idea and I realized that my money would be spent as I wanted it to be. I would like to add that the commitment of IIT to stay in the city played a big role in my deciding to support the institution.”

Marz is proof that the university community is strengthened through active alumni participation. He served on CSL’s Board of Overseers until this spring. He was CSL’s leading alumni donor to the CSL Laboratory Initiative Campaign. CSL heads the Summer in Paris Program, and when travel costs soared last year, Marz stepped in with funds to help defray the costs for every student’s airline ticket. He was an enthusiastic participant in our inaugural IIT Karl Menger Lecture and Award, traveling from Michigan to spend the day honoring his old teacher.

Marz has met with IIT’s political science and public administration students, and gave a presentation on authority in organizations and Herbert Simon’s concept of “satisficing.” He touts the outstanding education he received at IIT and speak of some of the greats he had as teachers – including Nobel Laureate and Political Science Professor Herb Simon, Mathematics Professor Karl Menger, and English Professor S. I. Hayakawa.

**Did you work in an IIT research lab? A lab researchers’/assistants’ reunion, all years, is being planned now for Summer 2009. If you are interested, please email cronin@iit.edu.**

Professor Doug Cork.

• Yaofu Zhou (PHYS, 1st year) worked at Fermilab with Physics Professor Dan Kaplan on research to test the feasibility of using Fermilab’s antiprotons for new matter and antimatter research, including research in antimatter gravitation acceleration.

For more information, please call Patty Cronin at 312.567.3132 or email cronin@iit.edu.
Chair and Professor of Applied Mathematics Fred Hickernell won the 2007 Dean’s Award for Excellence in Research. Professor of Applied Mathematics, Associate Chair, and Director of Undergraduate Studies Greg Fasshauer won the 2007 Dean’s Award for Excellence in Teaching.

The department held a conference in honor of Buck McMorris, former CSL dean and professor of applied mathematics and computer science. Fourteen invited speakers delivered talks in fields related to McMorris’ specialties in discrete applied mathematics and computational biology.

McMorris gave the closing plenary at the 32nd annual meeting of the German Classification Society in July in Hamburg. He is the president of the International Federation of Classification Societies (IFCS), of which the German Classification Society is a member.

Shuwang Li joined the department as an assistant professor.

Professor Tomasz Bielecki and Assistant Professor Hemanshu Kaul were named to the editorial board of the European Journal of Pure and Applied Mathematics.

Senior Lecturer Charles Tier will serve a fourth term on the editorial board of the Society for Industrial and Applied Mathematics (SIAM) Journal on Applied Mathematics.

Students in the department formed a Society for Industrial and Applied Mathematics (SIAM) student chapter. It will organize various activities including research seminars, social activities, inter-department competitions, and field trips under the direction of faculty advisers Xiaofan Li, associate professor, and Igor Cialenco, assistant professor.

Senior Lecturer David Maslanka won the 2008 Bauer Family Award for Excellence in Undergraduate Teaching.

2nd Annual IIT Karl Menger Lecture and Award

About 115 guests heard Lloyd N. Trefethen of Oxford University speak at the second annual IIT Karl Menger Lecture and Award in the MTCC Ballroom in April. Attendees included alumni, emeriti, students, faculty, staff, Mrs. Rosemary Menger Gilmore (one of Menger’s daughters) and her husband, as well as IIT President John Anderson.

Before the lecture, guests shared memories of Menger, led by Professor Jerry Frank (M.S. MATH ’69, Ph.D. ’72). Many remembered, among other things, Menger’s famously chaotic office. Those who spoke included distinguished emeriti, students, faculty, staff, Mrs. Rosemary Menger Gilmore (one of Menger’s daughters) and her husband, as well as IIT President John Anderson.

A dinner at the MTCC Pritzker Club wrapped up the day’s activities.

Fasshauer Leads Research Week, Delivers Talks in Italy and Germany

In September, Professor of Applied Mathematics, Associate Chair, and Director of Undergraduate Studies Greg Fasshauer was the sole invited speaker at the Dolomites Research Week on Approximation 2008 in Alba di Canazei, Trento, Italy, where he gave six lectures on “Meshfree Approximation Methods in MATLAB.” The lectures covered material from his recent book of the same name (2007) and beyond.

Fasshauer gave a plenary lecture, “RBF Interpolation and Iterated Approximate MLS Approximation,” at the Workshop on Positive Definite Functions in Numerical Analysis and Statistics at the University of Göttingen (Germany), September 18–20.

The workshop brought together researchers from numerical analysis and geostatistics in order to improve synergy and to open new areas of joint research. He also gave the plenary lecture “Solving Ill-Conditioned Symmetric Positive Definite Linear Systems with Riley’s Algorithm” at the 7th International Conference on Multivariate Approximation at Haus Bommerholz in Germany.

Applied Mathematics News

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Professor Norman Lederman Receives Honorary Doctorate from Stockholm University

For his essential contributions to science education, Norman Lederman, professor and chair, Mathematics and Science Education Department (MSED), received an honorary doctorate from the Faculty of Science at Stockholm University in September 2008. Stockholm University is one of Sweden’s largest and most prestigious institutions of higher learning, with a focus on research in humanities, law, and natural and social sciences. It has 40,000 students on four campuses.

“This is a wonderful award and attests to Lederman’s leadership in his field globally,” said F. R. “Buck” McMorris, former dean of the College of Science and Letters. “Dr. Lederman is a tireless, passionate researcher, teacher, innovator, and advocate who has helped teachers and students all over the world. We are extremely proud of him.”

Since Lederman came to IIT in 2001 to establish the MSED, it has become a force locally, nationally, and internationally for discipline-based mathematics and science education, with an emphasis on how scientific inquiry/direct instruction can improve learning. The department has more graduate students and more per capita research funding than any other IIT department, and is active in research with partners locally, nationally, and internationally.

MSED Guides Teaching at New IIT Math & Science Academy

This fall, Perspectives Charter Schools and Illinois Institute of Technology opened the Perspectives Charter Schools/IIT Math & Science Academy, supported through a $500,000 grant from the Motorola Foundation in partnership with the Renaissance Schools Fund. It is based within the Benjamin W. Raymond School near IIT at 3663 South Wabash Avenue.

The school’s curriculum focuses on technology and engineering skills and will be the first Chicago charter school to offer a four-year Chinese language program.

Perspectives worked in full partnership with Norman Lederman, MSED chair and professor, and Judith Lederman, senior instructor and director of teacher education, to develop a comprehensive curriculum and mentorship initiative.

“The Perspectives/IIT Math & Science Academy will bring to life the subjects that equip what we call the Innovation Generation with critical skills they will need to solve the challenges of the future,” said Eileen Sweeney, director of the Motorola Foundation.

Baxter Gives $500,000 for Science Education

Baxter International, Inc. awarded MSED $500,000 to improve science teaching at select schools, the company announced in October. It is part of a $5 million, five-year Baxter gift to support Chicago Public Schools (CPS) district science initiatives. Baxter will develop several science schools and a district-wide biotech instruction program, with MSED providing teacher development and training in biology, chemistry, and physics.

“We have a responsibility to ensure that future generations are given every opportunity to be educated and inspired by science,” said Robert L. Parkinson, Jr., chairman and CEO of Baxter International, Inc.

IIT–CPS High School Transformation Project Expands Again

Nine more Chicago Public Schools (now 20 out of 36 eligible) have selected MSED as their partner in the High School Transformation (HST) Project this school year, the HST Project’s third. HST is a multi-year, $21 million project to improve high school curriculum and instruction in mathematics, language arts, and science. It is funded by the Bill & Melinda Gates Foundation, CPS, and the schools.

Judith Lederman Named 2008 Fulbright Fellow

Judith Lederman, senior lecturer and director of teacher education, was awarded a Fulbright Fellowship in 2008 for work in South Africa. At the University of Witwatersrand, Johannesburg, she worked with faculty on informal learning, nature of science, and scientific inquiry research projects. She consulted with and advised graduate students on their research projects.

She gave a workshop at the Southern African Research School and assisted Ph.D. students from a variety of Southern African universities in conceptualizing their research, designing studies, and analyzing data.
Harold (Hal) M. Manasevit, who earned his Ph.D. in physical inorganic chemistry from IIT in 1959, died in March. He visited with several BCPS faculty last winter, including Chair and Physics Professor John Zasadzinski, Physics Professor Carlo Segre, and Chemistry Professor Peter Lykos, who taught Manasevit. In January, Manasevit also met IIT President John Anderson during a Los Angeles alumni event.

In 1968, Manasevit invented the metal-organic chemical vapor deposition (MOCVD) process to make laser diodes, working with Russell Dupuis and Paul Dapkus at Rockwell International. MOCVD became the most-used process for making laser-emitting diodes. Manasevit also developed chemical vapor deposition techniques for, among other things, producing semiconductor films and superconducting films.

He received the IEEE Morris N. Liebmann Memorial Award “for pioneering work in metalorganic chemical vapor deposition, epitaxial-crystal reactor design, and demonstration of superior quality semiconductor devices grown by this process.” Manasevit had 16 patents and wrote or co-wrote more than 50 publications. His papers are held at the Chemical Heritage Foundation.

BCPS Energy-Related Research Grows

With growing recognition of its strengths in energy research, BCPS received funding for several new energy research projects this year:

Open framework materials for hydrogen storage and catalysis
Open framework materials have porous channel structures. Ishaque Khan, professor of chemistry and associate dean of the College of Science and Letters, has developed a new class of crystalline compounds based on vanadium oxide clusters that are similar to buckyballs. Because these crystals are composed of such large molecules, they also have nanoscale voids that can be exploited for use as hydrogen storage or as catalysts. These open framework materials also can be designed as new catalysts that help break down harmful gases emitted during burning or refining of fossil fuels. Funding from Grace Davidson and Saud University: $300,000 for two years.

Biological agents for desulphurization of oil
High worldwide demand for oil has created a greater urgency for new technologies to remove sulphur from currently unusable, high-sulphur crude oil. Professor of Biology and Associate Chair for Biology Ben Stark and Research Professor of Biology John Kilbane are developing a new technique to use bacteria to consume the sulphur. Such bacteria could be placed directly into an oil reserve and remove the sulphur in situ. The bacteria can be genetically modified to enhance their sulphur-eating capabilities. Funding from Saudi Aramco: $550,000 for two years.

New coatings for corrosion-resistant reactor vessels
Nuclear power reactors are cooled by a melted, flowing Pb-Bi alloy. This alloy can react with the steel reactor vessel, causing corrosion and damage – a safety and security problem. Professor of Physics Carlo Segre and Assistant Professor of Physics Jeff Terry are exploring the use of sophisticated coatings of steel to prevent such corrosion. They use X-ray scattering to monitor the interaction of the coated steel with the Pb-Bi alloy. Funding from the Department of Energy (DOE): $200,000 per year.

In-situ X-ray studies of fuel cells
Professor Segre also has used X-ray scattering techniques to examine the anode catalyst during operation of the fuel cell. Understanding the structural changes that occur will enable design of higher performance and lower cost catalysts. Funding from DOE: $100,000 per year.

Superconducting materials for electrical transmission and devices
BCPS Chair and Physics Professor John Zasadzinski and Associate Physics Professor Liam Coffey are studying high-temperature superconductors and their properties so that room-temperature superconductors can be developed. Zasadzinski also is studying the use of superconductors as accelerator elements in the next generation of linear particle colliders, which could save 90 percent on electricity costs. Funding from Argonne National Laboratory: $130,000 per year.

For more information, contact John Zasadzinski (Chair, BCPS) at zasadzinski@iit.edu.
More Alumni News

Marilyn Kouba (CHEM ’50, M.S. ’63) established the Marilyn J. Kouba Gift Annuity Fund for the chemistry department. “I felt that my education and the reputation of IIT prepared me very well for my career teaching in the Chicago City Colleges – Harold Washington College (Loop),” she said. “I considered that it was time to give back, and I wanted to give to my department.”

Cell biologist and neuroscientist George M. Langford (BIOL M.S. ’69, Ph.D. ’71) was named dean of the College of Arts and Sciences at Syracuse University.

Ed Erickson (MATH ’68, M.S. ’70), who has started 10 companies for drug delivery, medical products, diagnostics products, and more, visited the BCPS department in May to hear about innovations in biosciences research here by Assistant Professor of Biology Jialing Xiang; Associate Professor of Chemistry and Associate Chair for Chemistry Rong Wang; Assistant Professor of Chemistry Hyun-soon (Joy) Chong; and Assistant Professor of Chemistry Sandra Bishnoi. Chair John Zasadzinski hosted.

Timothy Zamb (BIOL ’68, Ph.D. ’78) heads the AIDS Vaccine Development Laboratory of the International AIDS Vaccine Initiative (IAVI), a global not-for-profit operating in 24 countries. His consortium received $23.7 million from the Bill & Melinda Gates Foundation to study novel viral vectors and their potential use in HIV vaccines.

Chemistry Major Changes Lives

Students put their classroom skills to work on real problems in the Interprofessional Projects (IPRO) program. Dave Curtin (CHEM, 5th year) learned how exciting this can be when he traveled to January to Laguna, a small village of about 10 farming families near Lima, Peru, and built one of the super-efficient rocket stoves he’d developed with his IPRO 325 team.

Students in IPRO 325 learn that two billion of the world’s rural poor live on about $3 per day, and many lack affordable water, energy, and shelter. The students design, build, and test water, energy, and shelter solutions that can be built, used, and maintained by local people with local materials and construction costs of less than $5.

For example, the IPRO-developed rocket stove can be built with discarded cans and barrels. It burns wood more quickly, efficiently, and cleanly than an open fire. A model was first designed by the Approvezio Research Center in Berkeley, CA. Students improved on earlier prototypes, which tended to still produce a lot of smoke, by creating a barrel-rocket stove—it has a skirt and an exhaust to divert excess smoke. It’s also safer; a child can touch the outer casing and not get hurt.

In Laguna, Curtin used a big metal trash can, three discarded paint cans, and two half-meter pieces of rebar to build his stove. When it worked and began furiously boiling water, he felt pure joy.

“I just stood there and watched in disbelief as my high expectations were exceeded by the astounding success,” he wrote of that moment in an IIT Writing Contest award-winning article for the student newspaper, TechNews.

“Not only did my stove work, but Rosita [the village matriarch] and her family decided it worked so well, they were going to build one or two for every house in town.

“It didn’t stop there, either,” he continued. “She told me that they
Frieder Receives IEEE Technical Achievement Award

IITRI Chair Professor of Computer Science and Director of the Information Retrieval Laboratory Ophir Frieder has received a 2008 Technical Achievement Award from the Institute of Electrical and Electronics Engineers (IEEE) Computer Society. With 85,000 members, the IEEE Computer Society is the world’s leading organization of computing professionals. The technical achievement awards honor outstanding, innovative work in computer and information science and engineering within the past 15 years. Frieder was cited for his pioneering development of scalable information systems.

Frieder focuses on scalable information-retrieval systems spanning search and retrieval and communications issues, with his systems deployed in commercial and governmental environments worldwide. Holder of a dozen patents, co-author of three books and more than 100 articles, he is the recipient of the 2007 American Society for Information Science & Technology (ASIS&T) Research in Information Science Award and is a fellow of the American Association for the Advancement of Science (AAAS), Association for Computing Machinery (ACM), and IEEE.

Ren Wins National Science Foundation CAREER Award

Assistant Professor of Computer Science Shangping Ren was awarded a National Science Foundation Faculty Early Career (CAREER) award. This very prestigious award supports the early career development of teacher-scholars who are the most effective at integrating research and education, with the goal of helping these people to build the foundation for a lifetime of work in research and education.

Slaughter Wins 2008-09 ARCS Chicago Fellowship

Tristan Slaughter, a doctoral student in the CS department’s Information Retrieval Laboratory, has been named a 2008-09 ARCS (Achievement Awards for College Students) Chicago Fellow. He will receive an unrestricted $10,000 annual award for up to four years as long as he continues to make satisfactory progress in his graduate program. Slaughter’s adviser is IITRI Chair Professor of Computer Science and Director of the Information Retrieval Laboratory, Ophir Frieder. ARCS Fellows are academically outstanding U.S. students who are chosen in part for their ability to contribute to worldwide advances in science and technology.

Chen Named 2008 ACM/IEEE HPC Fellow

Yong Chen (CS Ph.D. candidate) was named a 2008 High Performance Computing Fellow, one of only three nationally. The award is from the Association for Computing Machinery (ACM), Institute of Electrical and Electronics Engineers (IEEE) Computer Society, ACM Special Interest Group on Computer Architecture (SIGARCH), and SC (Supercomputing) Conference Series. He will receive $5,000 for his education, $1,600 for travel to conferences, and a certificate.

Chen’s research for this fellowship is “A Hybrid Data Prefetching Architecture for Data Access Efficiency.” Chen’s adviser is Computer Science Professor Xian-He Sun.

Computer Science News

CS Professor and Acting Department Chair Bogdan Korel announced that department courses have met all national standards for Information Systems Security Professionals (4011) and Systems Certifiers (4015) through the U.S. government’s Information Assurance Courseware Evaluation (IACE) Program.

Wai Gen Yee, assistant professor of computer science, and his collaborators won the “Best Paper Award” at the ACM/ICST Third International Conference on Scalable Information Systems (INFOSCALE). The paper was “Efficient Query Routing by Improved Peer Description in P2P Networks.” The conference was held in June in Italy.

In December, CS Ph.D. candidate Cong Du was awarded an Honorable Mention at the Virginia Tech High-End Computing Challenge for her paper “MPI-Mitten: Enabling Migration Technology in MPI.” Du is completing her dissertation under Computer Science Professor Xian-He Sun, who co-authored the winning paper.

The department’s 2007 Best Student Paper of the Year was “Interval-Based Timing Constraints: Their Satisfactions and Applications” by Yue Yu, Assistant Professor Shangping Ren, and Professor Ophir Frieder. The paper addresses an important problem in the development of provably correct time-critical systems, explicating a number of key properties of the recent interval-based timing constraint model. The article is scheduled for publication in IEEE Transactions on Computers.
CS Alumna Holley Receives Beveridge Award, Named to IIT Board of Trustees

Jean K. Holley (M.S. CS/Engineering ’86) won this year’s Julia Beveridge Award, alumni category. Beveridge awards honor contributions and leadership by women in the IIT community.

Holley also was named to the IIT Board of Trustees this year. Holley is executive vice president and chief information officer at Tellabs, which creates and supports telecommunications networking products for telecommunications service providers. Customers are in 80 countries; more than half of all mobile calls globally are made on networks owned by Tellabs customers.

ComputerWorld named Holley one of the top 100 CIOs (2002), and the Association of IT Professionals named her “CIO of the Year” (2000). In 2005, Holley was inducted into the Women in Science and Engineering Hall of Fame by University of Missouri-Rolla (now Missouri University of Science and Technology), where she earned her undergraduate degree.

CS Alumnus Hrebicek (CS ’03) Launches Synplicity

After working at Microsoft for four years, Ondrej Hrebicek (CS ’03) left to help start Synplicity in Silicon Valley. “Synplicity is building a product that will help bridge the online and offline worlds that computer users live in today,” he says. “Its goal is to ensure people have access to their files anywhere and anytime, online or offline, on any computer and any web applications they may use.” The company launched to the press in April and has closed on at least two rounds of seed financing.

Summize Acquired by Twitter

Summize’s recent acquisition by Twitter made worldwide headlines this spring. Summize created a tool for conversation search that used Google Language Tools to translate non-English Twitter messages into English. It was created by Abdur Chowdhury (Ph.D. CS ’01), who did his doctoral thesis on sentiment mining, and Eric Jensen (CS ’01, M.S. ’02, Ph.D. ’06). They started the search engine as an academic research project in Ophir Frieder’s Information Retrieval Laboratory. Chowdhury has 15 applications for patents and 70 publications on networking, operating systems, system scaling, and information retrieval.

CS Alumnus Herzog (CS ’85) Speaks to Undergraduate Business Council

In September, Chris G. Herzog (CS ’85) addressed the IIT Undergraduate Business Council. Herzog is president and chief executive officer of Software Technologies Group, which Deloitte named three times to its list of Chicago’s fastest-growing companies (“Greater Chicagoland Technology Fast 50”). Among his many other activities, Herzog is a longtime IPRO judge for IIT.

Alumni, Get In Touch!

Our alumni do fascinating things. Write and tell us what you’re doing. We’ll publish it in an upcoming issue.

Send your item to cronin@iit.edu by Spring 2009. Call 312.567.3132 for more information.

Know a smart young person who could be a great IIT student? Please contact Jerry Doyle at 312-567-5203 or doyle@iit.edu.
Harrington Speaks on “Skyscrapers” and “The Chicago School of Architecture” at the University of Salerno

Kevin Harrington, professor of art and architectural history, gave two invited lectures, “Skyscrapers” and “The Chicago School of Architecture,” to the Architecture Program at the University of Salerno in March 2008. Discussions following Harrington’s lectures moved away from the soaring heights to which Chicago’s skyscrapers reach, focusing instead on the foundations that hold Chicago’s buildings in place. Salerno is situated in a region both seismically and volcanically active, and traditionally keeps its buildings relatively short. The bedrock beneath Chicago is 100-150 feet underground, leading to the development of creative solutions for building foundations. The audience was interested in how many small- to medium-height buildings in Chicago are “floated” on the sand and other materials making up the substrate lying between the surface and the bedrock.

Feinberg Speaks on Professional Development in Technical Communication

Professor Susan Feinberg, director of IIT’s Usability Testing and Evaluation Center (UTEC), was one of three panelists in an open forum on “Education and Employment: Challenges and Opportunities for Technical Communicators,” held by the Chicago Chapter of the Society for Technical Communication (STC) at DePaul University, October 14.

Feinberg cited the critical role that self-starting strategies play in a successful career, urging students to explore networking possibilities early and often in their education. She emphasized the need for students to seek internships for professional and networking options and to attend technical communication conferences and seminars. “Many professional opportunities present themselves through networking at these conferences, some of them from IIT alumni who attend,” Feinberg said.

When asked how technical communication students can most effectively use their time and resources, she offered what she considers a triumvirate of strategies for success: “develop your own research or area of expertise, create a dynamic portfolio, and participate in an internship.”

Technical Communication Ph.D. Student Hannigan Publishes Technical Writing Textbook

Carrie Hannigan (TECH Ph.D. candidate) has published Kaplan Technical Writing: A Resource for Technical Writers at All Levels. The 624-page textbook is coauthored with Diane Martinez, Tanya Peterson, Carolyn Stevenson, and Carrie Wells.

Technical writing is presented as an essential form of communication that allows readers to accomplish real-world tasks. The textbook applies technical writing principles to a host of purposes including interoffice memos, email, proposals, reports, and other forms of professional communication. In June 2008, Hannigan participated in a joint panel at the Online Teaching Conference in Oceanside, CA. Hannigan discussed the need for instructors to teach technology and social skills that will make their students’ online learning less stressful and more successful.
The Department of Social Sciences continued its annual “Politics in Film” series with movies on the theme “Why We Fight.” The series provides monthly large-screen showings of classic explorations of key political themes in film.

Professor Don Howard (Department of Philosophy, Program in History and Philosophy of Science, University of Notre Dame) presented the Fall 2008 Sawyier Philosophy Lecture in Science, Technology, and Society at IIT on October 24. Howard spoke on “Einstein the Philosopher.” Einstein made important contributions to philosophy as well as science in the 20th century. These include influential views on the structure of theories, method, and the role of simplicity in science. His philosophy of science was connected not just with his physics but also with his moral and political philosophy and even his theological views.

This lecture series is sponsored by the Lewis Department of Humanities and made possible by a generous endowment to the department from the late Fay Sawyier, professor emerita of philosophy, who was an IIT faculty member from 1975-1988. This endowment also supports the Sawyier Predoctoral Fellows in philosophy, Christopher DiTeresi and Brett Fulkerson-Smith (pictured below).

Election Results Analysis: 2008 Post-Election Forum

The department held a post-election forum on November 11 at MTCC to talk about what happened in this year’s elections and how it will affect this country and the world. Guests included professors Dick Simpson, Paul DeForest, and Nicole Martinez. Simpson is professor and head of the political science department at University of Illinois at Chicago. He is a former alderman and candidate for Congress, and served on the transition teams of Chicago mayors Jane Byrne and Harold Washington. Martinez is a graduate of Princeton University and of Harvard Law, where she edited articles for the Harvard Latino Law Review, as well as the University of Chicago. IIT’s own DeForest focuses his research on nuclear, biotechnology, and biomedical policy. He has written several books, including The Matrix of Biological Disarmament (1990) and The Changing Political Context of Biotechnology (1995). He has taught at IIT Chicago-Kent College of Law and in IIT’s Master of Public Administration program, as well as in the Social Sciences Department.

Going Global

This fall, the department began offering “Japanese for Social Scientists I,” an introductory course in the Japanese language, designed to focus on the vocabulary and skills most useful to students in the social sciences. The class is part of an East Asian studies cluster developed in response to student request.

2nd Annual Politics in Film Series

The Department of Social Sciences continued its annual “Politics in Film” series with movies on the theme Why We Fight. The series provides monthly large-screen showings of classic explorations of key political themes in film.
Five CSL Graduates Win IIT Alumni Awards

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IIT Alumni Achievement Award

Throughout his 50-year career as a mathematics professor at Stanford University, Samuel Karlin (MATH ’44, M.S. ’45) (1924–2007) made fundamental contributions in an unusual variety of mathematical fields, including the statistical theory used in BLAST, the software for evaluating new DNA sequences. He was the author or coauthor of 10 books and more than 450 published papers. He was a member of the American Academy of Arts and Sciences and the National Academy of Sciences, and received the National Medal of Science in 1989.

IIT Outstanding Young Alumni Award

Douglas W. Opicka (PS ’97, M.P.A. ’97) has mentored Phi Kappa Sigma fraternity members, recruited dozens of students, raised money, facilitated a student housing improvement project, and helped to establish one of the university’s largest annual scholarship programs. A business team leader for BearingPoint, he is guiding a $15 million project to develop a new pension administration system for the Commonwealth of Kentucky.

Judith Lederman Named 2008 Fulbright Fellow

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In addition, Lederman presented the keynote address at the Biennial Conference of the South African Association of Science and Technology Educators National. While at this conference, she also conducted workshops for K-12 science teachers on scientific inquiry and nature of science; conferred with university faculty on collaborative nature of science and inquiry research studies; and met with teachers to address their needs and issues in regards to effectively teaching science and scientific inquiry.